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Ronald L. Grudziecki  
BURNS, DOANE, SWECKER & MATHIS, L.L.P.  
P.O. Box 1404  
Alexandria, VA 22313-1404

EXAMINER
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TRAN, HIEN THI

ART UNIT	PAPER NUMBER
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1764

DATE MAILED: 09/02/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/897,453

Applicant(s)

MAUNULA, TEUVO

Examiner

Hien Tran

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 17 June 2005.  
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.  
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1,3-11,13,21 and 27-32 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.  
6) ☒ Claim(s) 1,3-11,13,21 and 27-32 is/are rejected.  
7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.  
8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.  
10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)  
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)  
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 3/10/05.  
4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.  
5) ☐ Notice of Informal Patent Application (PTO-152)  
6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Claim Objections***

1. Claim 5 is objected to because of the following informalities:

In claim 5, line 4 apparently "are" should be changed to --is--.

Appropriate correction is required.

### ***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claim 11 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 11, it is unclear as to what structural limitation applicant is attempting to recite, the regeneration of "sulfates", "nitrates", and "particles", "lean mixture" and "rich mixture" have no clear antecedent basis. Note that the lean and rich mixing ratios are merely referred to in the preamble of the claim and are not parts of the system. Furthermore, claim 11 is an improper dependent claim as it fails to further limit the subject matter of the previous claims. Apparently, claim 11 merely recites process limitation and therefore is not structurally further limiting.

### ***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

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5. Claims 1, 8-9, 27-28, 30 are rejected under 35 U.S.C. 102(b) as being anticipated by WO 00/21647.

With respect to claim 1, WO 00/21647 discloses that the system comprises a NO<sub>x</sub> adsorption catalyst 28, a particle separator 16, and a three-way catalyst 30 wherein the NO<sub>x</sub> adsorption catalyst 28 is arranged in the same structure with three-way catalysts 30 (page 8, lines 12-13). The three-way catalyst 30, such as Pt, is the same as the oxidation catalyst of the instant claim and therefore possesses the same properties. WO '647 further discloses that the three-way catalyst, such as Pt, is for converting NO to NO<sub>2</sub> (abstract, page 2, lines 29-31).

With respect to claim 8, WO 00/21647 discloses that the particle separator 16 contains oxidation catalyst, such as Pt (col. 3, lines 6-15; col. 2, lines 29-31).

With respect to claims 9, 30, WO 00/21647 discloses that the oxidation catalyst contains precious catalyst metal or three-way catalyst metal, such as platinum catalytic metal (page 4, lines 1-11, claim 5). The three-way catalyst metal is effective to promote conversion of HC and CO.

With respect to claims 27, 28, WO 00/21647 discloses that the particle separator 16 also contains catalysts, such as Pt, La (page 3, lines 6-11) which are considered as oxidation catalyst and NO<sub>x</sub> adsorption catalyst.

Instant claims 1, 8-9, 27-28, 30 structurally read on the apparatus of WO 00/21647.

***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person

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having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

8. Claim 3-4, 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over WO 00/21647.

With respect to the specific arrangement of the units in claims 3-4, 29, it would have been obvious to one skilled in the art at the time of the invention was made to select an appropriate arrangement for the units since positioning the parts of the apparatus is no more than a design choice, and well within the knowledge of one skilled in the art so as to achieve the purification attendant therewith, absence showing any unexpected results and since it has been held that rearranging parts of an invention involves only routine skill in the art. *In re Japikse*, 86 USPQ 70.

It should be noted that where the only difference between the prior art and the claims is a recitation of a specific arrangement of the units, and the units having the claimed elements would not perform differently than the prior art device, the claimed device is not patentably distinct from the prior art device.

9. Claims 5-7, 10, 13, 21, 31, 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over WO 00/21647 in view of Shinzawa et al (4,887,427) or DE 3,518,756.

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WO 00/21647 further discloses a connecting channel 10.

With respect to claims 5-6, 7, 10, 31, 32, the apparatus of WO 00/21647 is substantially the same as that of the instant claims, but is silent as to whether each adsorbent is arranged in an exhaust discharge line of each cylinder of the engine and the discharge line being connected to a connecting channel containing the separator and the oxidation catalyst.

However, Shinzawa et al and DE 3,518,756 disclose provision of each exhaust discharge line of each cylinder of the engine has catalyst filter.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to arrange a set of operational units in each exhaust discharge line of each cylinder of the engine as taught by either Shinzawa et al or DE 3,518,756 so as to enhance the purification of the system thereof.

With respect to claims 13, 21, WO 00/21647 discloses that the adsorption catalyst comprises platinum and at least one element selected from compounds of alkali metals (Li, Na, etc.), alkaline earth metals (Ba, Ca, etc.) and transition metals (page 3, line 17 to page 4, line 2, claim 2).

10. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over WO 00/21647 in view of Shinzawa et al (4,887,427) or DE 3,518,756 as applied to claim 10 above and further in view of EP 758,713.

With respect to claim 11, since these claims are directed to method limitations which are of no patentable moment in apparatus claims, the modified apparatus of WO 00/21647 structurally meets these claims.

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In any event, EP 758,713 discloses provision of regeneration of the NOx adsorption catalyst by periodically using a lean mixture and a rich mixture (col. 8, line 3 to col. 9, line 12; col. 10, lines 4-6, etc.)

It would have been obvious to one having ordinary skill in the art to alternately regenerate the NOx adsorption catalyst by periodically using a lean mixture and a rich mixture as taught by EP 758,713 in the modified apparatus of WO 00/21647 so as to reuse the adsorption catalyst.

11. Claims 1, 3-5, 8-9, 11, 27-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over EP 758,713.

With respect to claims 1, 3-4, 29, EP 758,713 discloses an apparatus consisting of three operational units including: an oxidation catalyst 5, a particle separator 7 and an NOx adsorption catalyst 9.

The apparatus of EP 758,713 is substantially the same as that of the instant claims, but fails to disclose a specific arrangement of the three units as claimed.

However, it would have been obvious to one skilled in the art at the time of the invention was made to select an appropriate arrangement for the units since positioning the parts of the apparatus is no more than a design choice, and well within the knowledge of one skilled in the art so as to achieve the purification attendant therewith absence showing any unexpected results and since it has been held that rearranging parts of an invention involves only routine skill in the art. *In re Japikse*, 86 USPQ 70.

With respect to claim 5, EP 758,713 discloses a connecting channel 3 (col. 3, lines 54-58).

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With respect to claim 8, EP 758,713 discloses that oxidation catalyst is disposed in the same structure with the separator (page 5, lines 22-43).

With respect to claim 9, EP 758,713 discloses that the oxidation catalyst contains precious catalyst metal, such as platinum catalytic metal (page 4, lines 50-59).

With respect to claim 11, EP 758,713 discloses provision of regeneration of the NO<sub>x</sub> adsorption catalyst by periodically using a lean mixture and a rich mixture (col. 8, line 3 to col. 9, line 12; col. 10, lines 4-6, etc.)

With respect to claims 27, 28, EP 758,713 discloses that the particle separator 7 also contains catalysts, such as Pt (page 5, lines 22-43) which are considered as oxidation catalyst and NO<sub>x</sub> adsorption catalyst.

With respect to claim 30, the NO<sub>x</sub> adsorption catalyst in EP 758,713 further includes a precious catalyst which is effective to promote conversion of HC and CO (page 4, lines 56-58).

12. Claims 6-7, 10, 13, 21, 31-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over EP 758,713 as applied to claims 1, 3-5, 8-9, 11, 27-30 above and further in view of Shinzawa et al (4,887,427) or DE 3,518,756.

The same comments with respect to Shinzawa and DE 3,518,756 apply.

With respect to claims 13, 21, EP 758,713 further discloses that the adsorption catalyst comprises platinum and at least one element selected from compounds of alkali metals (Li, Na, etc.), alkaline earth metals (Ba, Ca, etc.) (page 5, lines 44-57).

### ***Response to Arguments***

13. Applicant's arguments filed 6/17/05 have been fully considered but they are not persuasive.



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Applicant argues that in contrast to the three operational units of instant claim 1, WO 00/21647 reference discloses four-unit combination of operation units and therefore does not meet the closed language associated with the combination of operational units. Such contention is not persuasive as instant claim 1 contains the phrase of “comprising” (open language) which opens the instant claim to the inclusion of other units/elements.

Applicant argues that WO ‘647 arranges the operational units in a different sequence from claim 1. Such contention is not persuasive as WO ‘647 discloses that the system may comprise a NOx adsorption catalyst 28, a particle separator 16, and a three-way catalyst 30 wherein the NOx adsorption catalyst 28 is arranged in the same structure with three-way catalysts 30 (page 8, lines 12-13). Such arrangement meets the specific order in instant claim 1. The three-way catalyst 30, such as Pt, is the same as the oxidation catalyst of the instant claim and therefore possesses the same properties. Furthermore, WO ‘647 discloses that the three-way catalyst, such as Pt, is for converting NO to NO<sub>2</sub> (abstract, page 2, lines 29-31).

Applicant’s arguments with respect to Shinzawa et al, DE ‘756 and EP ‘713 regarding the arrangement of the units are noted. However, Shinzawa et al and DE ‘756 are only relied upon for teaching the conventionality of locating a catalyst filter in each exhaust discharge line of each cylinder of the engine. EP ‘713 is only relied upon for teaching the conventionality of regenerating NOx adsorption catalyst by periodically adjusting the mixing ratio of the engine from a lean mixture to a rich mixture.

In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so

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long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971). In this case, EP '713 discloses all of the structural elements set forth in the instant claims, except for the specific arrangement of the units, it would have been obvious to one skilled in the art at the time of the invention was made to select an appropriate arrangement for the units since positioning the parts of the apparatus is no more than a design choice, and well within the knowledge of one skilled in the art so as to achieve the purification attendant therewith, absence showing any unexpected results and since it has been held that rearranging parts of an invention involves only routine skill in the art. *In re Japikse*, 86 USPQ 70. It should be also noted that where the only difference between the prior art and the claims is a recitation of a specific arrangement of the units, and the units having the claimed elements would not perform differently than the prior art device, the claimed device is not patentably distinct from the prior art device.

### ***Conclusion***

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hien Tran whose telephone number is (571) 272-1454. The examiner can normally be reached on Tuesday-Friday from 7:30AM-6:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola can be reached on (571) 272-1444. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

*Hien Tran*

HT

**Hien Tran**  
**Primary Examiner**  
**Art Unit 1764**